Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An analysis model data creating method for creating an analysis model data using an arithmetic device, comprising:

~~a shape data readout step of~~ reading out shape data defining a surface shape of an analysis target;

~~a voxel data generating step of~~ generating voxel data in which the read out shape data ~~read out at the shape data readout step~~ are embraced by a set of voxels that are rectangular parallellopipeds ~~parallellopiped~~; ~~and~~

~~an interference polygon creating step of~~ creating, for each voxel interfering with the read out shape data ~~read out at said shape data readout step~~, an interference polygon inside the shape data using interference surfaces between the shape data and the interior of the voxel; ~~, the method further comprising:~~

~~after the interference polygon creating step, a divided polygon step of~~ moving one of the vertexes of the interference polygon which has a predetermined property, to another vertex and creating a divided polygon having, as vertexes, said vertex that has not been moved and vertexes of the voxel inside said shape data; and

~~an element extracting step of~~ extracting an element of a predetermined shape on the basis of a relationship between a plurality of vertexes of the divided polygon ~~created at the divided polygon creating step~~.

2.   (Currently Amended) The analysis model data creating method according to claim 1, wherein said ~~divided polygon~~ creating ~~step~~ the divided polygon includes ~~a particular vertex moving step of~~ moving vertexes of the interference polygon which are not located on any side of said voxel, to an on-side intersection that is an intersection between said interference surface and a side of said voxel.

3.   (Currently Amended) The analysis model data creating method according to claim 1, wherein said element extracting ~~step~~ includes ~~an extraction preprocess step of~~ defining, for element extraction, straight lines between the vertexes of said divided polygon and a surface containing some of the vertexes and ~~which is~~ parallel with any of said voxel surfaces.

4.   (Currently Amended) The analysis model data creating method according to claim 1, wherein said element extracting ~~step~~ comprises ~~a top and bottom surface setting step of~~ setting a bottom surface and a top surface corresponding to the bottom surface in said divided polygon,

a vertex allotting step of allotting the vertexes of said divided polygon to the set top surface side and the set bottom surface side set at the top and bottom surface setting step,

a top and bottom surface vertex pair identifying step of identifying correspondences between the vertexes on the top and bottom surface sides which have been allotted at the vertex allotting step, and

a pair used extracting step of extracting an element of a predetermined shape from the divided polygon using the top and bottom surface pairs identified as correspondences at the top and bottom surface vertex pair identifying step.

5.   (Currently Amended) An analysis model data creating method for creating an analysis model data using an arithmetic device, comprising:

a shape data readout step of reading out shape data defining a surface shape of an analysis target;

a voxel data generating step of generating voxel data in which the read-out shape data read out at the shape data readout step are embraced by a set of voxels that are rectangular parallellopipeds parallellopiped; and

an interference polygon creating step of creating, for each voxel interfering with the shape data, an interference polygon inside the shape data using interference surfaces between the shape data and the interior of the voxel; , the method further comprising:

after said creating of the interference polygon creating step, a divided polygon creating step of moving vertexes of the interference polygon which are

not located on any side of said voxel, to an on-side intersection that is an intersection between said interference surface and a side of said voxel, and creating a divided polygon having, as vertexes, the on-side intersection and vertexes of the voxel inside said shape data; and

~~an element extracting step of~~ extracting an element of a predetermined shape using a plurality of vertexes of the divided polygon ~~created at the divided polygon creating step~~ and a voxel surface inside said shape data or a plane which is perpendicular to an internal voxel surface, or a partial area of the voxel surface, and which contains said vertexes.

6.   (Currently Amended) The analysis model data creating method according to claim 5, wherein said element extracting ~~step~~ comprises:

~~a bottom surface setting step of~~ identifying one internal voxel surface of said divided polygon which has a predetermined property and setting the identified internal voxel surface as a bottom surface;

~~a top surface setting step of~~ identifying a top surface corresponding to the set bottom surface ~~set at the bottom surface setting step~~;

~~a top and bottom surface allotting step of~~ allotting all the vertexes of said divided polygon to the top surface side and the bottom surface side; and

~~an extraction preprocess step of~~ defining a plane perpendicular to said internal voxel surface on the basis of a relationship between the vertexes allotted to the bottom and top surfaces ~~at the top and bottom surface allotting step~~.

7.   (Currently Amended) The analysis model data creating method according to claim 6, wherein said defining the plane extraction preprocess step comprises:

a vertex retrieving line scanning step of generating a vertex retrieving line perpendicular to said bottom surface and scanning the vertex retrieving line on a side of said divided polygon corresponding to said bottom surface thereof;

a pair number applying step of applying, if any vertex of said divided polygon is discovered while the vertex retrieving line is being scanned during the vertex retrieving line scanning step, a pair number to the vertex retrieving line at the position of the discovery;

a pair generating step of generating, after completion of the scanning by said vertex retrieving line scanning step, pairs of vertexes on the bottom surface side and vertexes on the top surface side on the basis of a plurality of lines to which the pair numbers have been applied and of the presence of said vertexes on the bottom surface side and said vertexes on the top surface side for each of the lines;

a projective point setting step of setting, if an intersection between said line imparted with the pair number and having a vertex that has not been paired at the pair generating step and a side of the divided polygon is inside said shape data, this the intersection as a projective point; and

a plane defining step of adding the projective point and a vertex corresponding to the projective point as said pair and defining a plane for element extraction on the basis of a relationship between the paired vertexes.

8.   (Currently Amended) The analysis model data creating method according to claim 6, wherein said element extracting ~~step~~ includes ~~a bottom surface changing step of~~ changing the bottom surface of divided polygons from which elements cannot be extracted and retrying the extraction process on the basis of the changed bottom surface.

9.   (Currently Amended) The analysis model data creating method according to claim 5, wherein said <u>creating of the</u> divided polygon ~~creating step~~ includes a ~~contraction process step of~~ contracting the on-side intersection to said vertex of the voxel if a distance from said on-side intersection to said voxel vertex is shorter than a predetermined contraction distance.

10.   (Currently Amended) The analysis model data creating method according to claim 9, further comprising, after said element extracting ~~step~~, ~~a contraction distance changing step of making such a change that~~ <u>increasing</u> the contraction distance of divided polygons from which elements cannot be extracted ~~is increased~~ and retrying said process for generating a divided polygon, on the basis of the changed contraction distance.

11.   (Currently Amended) The analysis model data creating method according to claim 5, wherein said element extracting ~~step~~ includes ~~a distorted shape excluding step of~~ executing, if an extracted element has a predetermined distorted shape, a process of not extracting the distorted shape as an element.

12.   (Currently Amended) The analysis model data creating method according to claim 5, wherein said ~~creating~~ the interference polygon ~~creating step~~ comprises:

~~a processed voxel extracting step of~~ extracting a voxel interfering with said shape data as a processed voxel;

~~an intra-voxel intersection determining step of~~ determining, ~~if~~ a presence of any vertex from the shape data ~~is present~~ inside the processed voxel, ~~this vertex as~~ to be an intra-voxel intersection;

~~an intra-surface intersection determining step of~~ determining, ~~if~~ a presence of any intersection between a surface of said processed voxel and a side of said shape data ~~is present, this intersection as~~ to be an intra-surface intersection;

~~an on-side intersection determining step of~~ determining, ~~if~~ a presence of any intersection between a side of said processed voxel and a surface of said shape data ~~is present, this intersection as~~ to be an on-side intersection; and

~~an interior and exterior determining value applying step of~~ applying an interior and exterior determining value for interior and exterior determination to each of said intra-voxel intersection, said intra-surface intersection, and said on-side intersection on the basis of front and back in formation contained in said shape data.

13.   (Currently Amended) A recording medium on which an analysis model data creating program for creating analysis model data using an arithmetic

device is recorded, the program comprising ~~as~~ instructions ~~to operate~~ <u>executable</u>

<u>by</u> said arithmetic device<u>, the program comprising</u>:

a shape data readout instruction to read out shape data defining a surface

shape of an analysis target;

a voxel data generating instruction to generate voxel data in which the

shape data read out by said arithmetic means in response to the shape data

readout instruction are embraced by a set of voxels that are rectangular

<u>parallellopipeds</u> ~~parallellopiped~~;

an interference polygon creating instruction to create, for each voxel

interfering with the shape data, an interference polygon inside the shape data

using interference surfaces between the shape data and the interior of the voxel;

a divided polygon creating instruction to move a vertex of the interference

polygon which is not located on any side of said voxel, to an on-side intersection

that is an intersection between said interference surface and a side of said voxel,

and creating a divided polygon having<u>,</u> as vertexes<u>,</u> the on-side intersection and

vertexes of the voxel inside said shape data; and

an element extracting instruction to extract an element of a predetermined

shape using a plurality of vertexes of the divided polygon created in response to

the divided polygon creating instruction and a voxel surface inside said shape

data or a plane which is perpendicular to an internal voxel surface, <u>or</u> a partial

area of the voxel surface, and which contains said vertexes.

14.   (Currently Amended) An analysis model data creating apparatus,

comprising:

a shape data readout device that reads ~~means for reading~~ out shape data

defining a surface shape of an analysis target;

a voxel data generator that generates ~~generating means for generating~~

voxel data in which the shape data read out by the shape data readout ~~means~~

device are embraced by a set of voxels which are rectangular parallellopiped;

an analysis model data generator that generates ~~generating means for~~

~~generating~~ analysis model data from the voxel data generated by the voxel data

generator ~~generating means~~; and

an analysis model data display ~~means for displaying~~ that displays the

analysis model data generated by the analysis model data generator ~~generating~~

~~means~~, wherein said analysis model data generator ~~generating means~~ comprises

an interference polygon creator that creates ~~creating section for creating~~,

for each voxel interfering with the shape data read out by said shape data

readout device ~~means~~, an interference polygon inside the shape data using

interference surfaces between the shape data and the interior of the voxel,

a divided polygon ~~creating section for moving~~ creator that moves one of

the vertexes of said interference polygon which has a predetermined property, to

another vertex, and ~~creating~~ creates a divided polygon having, as vertexes, the

on-side intersection and vertexes of the voxel inside said shape data, and

an element ~~extracting section for extracting~~ extractor that extracts an

element of a predetermined shape on the basis of a relationship between a

plurality of vertexes of the divided polygon created by the divided polygon creating section.